

DT04 Rec'd PCT/PTO 24 SEP 2004

What is claimed is:

1. A method for processing an olefin stream containing oxygenates and water, wherein the oxygenates comprise organic compounds that contain at least one oxygen, comprising:
 - providing an olefin stream containing oxygenates and water;
 - dewatering the olefin stream;
 - compressing the dewatered olefin stream;
 - washing the olefin stream with methanol to remove at least a portion of the oxygenate from the olefin stream;
 - contacting the methanol washed olefin stream with water; and
 - fractionating the water contacted olefin stream.
2. The method of claim 1, further comprising drying the water contacted olefin stream prior to fractionating.
3. The method of claim 1, wherein the washing the olefin stream with methanol to remove at least a portion of the oxygenate from the olefin stream; and the contacting the methanol washed olefin stream with water is carried out in a single wash column.
4. The method of claim 1, wherein the dewatered olefin stream is compressed to form a condensate containing dissolved heavy oxygenates and a gaseous olefin stream which is washed with the methanol.
5. The method of claim 4, further comprising sending the condensate to a stripping column in which an overhead product of light hydrocarbons and a bottom product of C₅+ hydrocarbons and heavy oxygenates are obtained.
6. The method of claim 5, wherein the overhead product of light hydrocarbons is sent to at least one compression step.

7. A method for producing olefins from methanol, the method comprises the steps of:
- contacting a molecular sieve catalyst with a first amount of methanol to produce an olefin stream, comprising an oxygenate wherein the oxygenate comprises an organic compound that contains at least one oxygen;
 - dewatering the olefin stream;
 - compressing the dewatered olefin stream;
 - washing the olefin stream with a second amount of methanol to remove at least a portion of the oxygenate from the olefin stream, wherein the second amount is from 1% to 10% of the first amount;
 - contacting the methanol washed olefin stream with water; and
 - fractionating the water contacted olefin stream.
8. The method of claim 7, further comprising drying the water contacted olefin stream prior to fractionating.
9. The method of claim 7, wherein the washing the olefin stream with methanol to remove at least a portion of the oxygenate from the olefin stream; and the contacting the methanol washed olefin stream with water is carried out in a single wash column.
10. The method of claim 7, wherein the dewatered olefin stream is compressed to form a condensate containing dissolved heavy oxygenates and a gaseous olefin stream which is washed with the methanol.
11. The method of claim 10, further comprising sending the condensate to a stripping column in which an overhead product of light hydrocarbons and a bottom product of C_5+ hydrocarbons and heavy oxygenates are obtained.
12. The method of claim 11, wherein the overhead product of light hydrocarbons is sent to at least one compression step.

13. The process of claim 7, wherein the step of contacting the molecular sieve catalyst occurs at a gas superficial velocity greater than 1 m/s.
14. The process of claim 7, wherein the step of contacting the molecular sieve catalyst converts from 90 wt.% to 98 wt.% of the first amount of methanol.
15. The process of claim 7, wherein the step of contacting converts above 98 wt.% to less than 100 wt.% of the first amount of methanol.